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NOTES ON GEOGRAPHIC DISTRIBUTION

Arachnida, Amblypygi, *Heterophrynus longicornis* (Butler, 1873): Distribution extension for the state of Piauí northeastern Brazil

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ABSTRACT: In this paper, we report the first records of *Heterophrynus longicornis* (Butler, 1873) for the state of Piauí, northeastern Brazil. We collected 58 individuals in thirteen municipalities throughout the state: Altos, Brasileira, Caracol, Castelo do Piauí, Guaribas, José de Freitas, Lagoa Alegre, Oeiras, Pedro II, Piracuruca, Teresina, União and Uruçuí.

Even with the noticeable increase in the number of new taxa described in the last two decades (Harvey 2007), the Amblypygi, commonly known as whip spiders, is one of the smallest Arachnida orders, with over 120 described species (Harvey 2002). These arachnids are easily recognized by its flat body without a terminal flagellum and with a narrow constriction (petiole), between pro and opisthosoma; extremely long and multisegmented first legs that act as tactile organs, and raptorial pedipalps (Weygoldt 2002).

Most amblypygids are nocturnal and live in moist forests where are found under rotting logs, between rock breaches and inside caves (Weygoldt 2000). The large (up to 35 mm) species of the genus *Heterophrynus* Pocock, 1894 can be observed on the bark of large trees and inside natural cavities in fallen logs (Weygoldt 1977). Those that live on trees can be observed sitting on the same tree for weeks or even months (Weygoldt 2002), usually facing downward, which suggests that they wait for ascending prey species that leave the litter at night and climb into the trees (Dias and Machado 2006). There are 11 described valid species of *Heterophrynus*, which are widely distributed over the South America, except in Argentina, Chile, Paraguay and Uruguay. In Brazil, representatives of this genus occur over the Amazon and the surrounding mountain regions, with a few records in the Central Brazil (Mello-Leitão 1931; Lourenço and Heurtault 1978; Weygoldt 2002).

Herein, we report the presence of *Heterophrynus longicornis* (Butler, 1873) (Figures 1-2) and provide a geographic distribution map in the state of Piauí (Figure 3). This species was previously recorded in Brazil from the Distrito Federal and the states of Amazonas, Pará, Amapá and Tocantins (Mello-Leitão 1931; Lourenço and Heurtault 1978; Weygoldt 2002; Giupponi 2002). As a result of expeditions carried out between 2003 and 2009, its distribution is extended towards the northeastern Brazil, occupying areas dominated by the Cerrado and Caatinga biomes.

FIGURE 1. Immature of *Heterophynus longicornis* preying on a cockroach in captivity.

FIGURE 2. Adult male of *Heterophynus longicornis* wandering on the ground at Sete Cidades National Park, municipalities of Brasileira and Piracuruca.

We collected 58 individuals of *H. longicornis* (30 males, 20 females and 8 juveniles) in thirteen municipalities and eleven localities (a few localities, such as national parks, occupy more than one municipality) throughout the state: União (forested patches between sugar cane plantations), Castelo do Piauí (Bonito Farm), José de Freitas (Nazareth Farm), Teresina (Ouro Verde Farm), Brasileira and Piracuruca (Sete Cidades National Park), Cacarol and Guaribas (Serra das Confusões National Park), and vegetation outside the municipalities of Altos, Lagoa Alegre, Oeiras, Pedro II and Uruçuí. Most of these individuals were collected using pit-fall traps with drift fences, used for vertebrate sampling, although a few specimens were collected during visual nocturnal sampling. Voucher specimens (MPEG 0062-0073) are deposited in the arachnid collection of Museu Paraense Emílio Goeldi (MPEG, A.B. Bonaldo, curator), at Belém, Pará, Brazil.

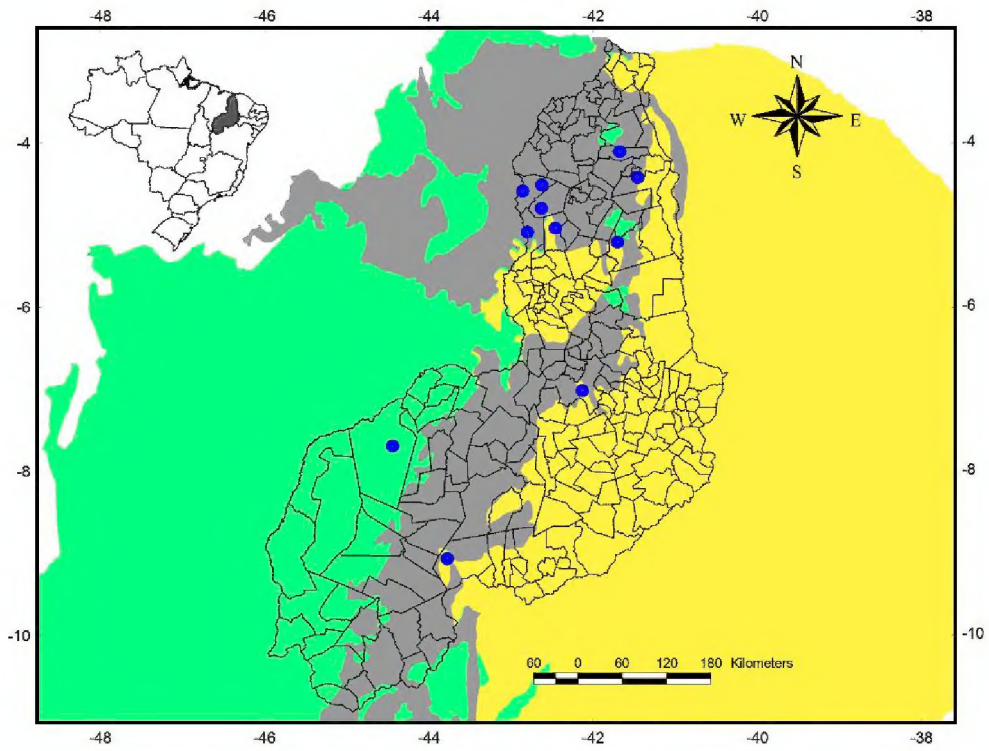

FIGURE 3. Records (blue circles) of *Heterophrynus longicornis* in the state of Piauí, northeastern Brazil. Green areas represent the Cerrado Biome, yellow represent the Caatinga Biome and grey areas are ecotonal regions.

The observed individuals were found in Cerrado forested phytophysiognomies, such as semi-deciduous dry forests (Figure 4), gallery forests (Figure 5), and palm tree woodlands (Figure 6); or humid enclaves and arboreal areas of the Caatinga biome. These habitats are evidently suitable for species that are otherwise wildly distributed in the Amazon rainforest, as has been shown in birds (Lopes *et al.* 2007) and marsupials (Miranda *et al.* 2009).

In the Amazon forest, *H. longicornis* exhibits microhabitat selection, and prefers large trees bearing buttresses (used for hunting and courtship) and burrows at the base where the individuals hide during daytime (Dias and Machado 2006). In Piauí, the individuals were also commonly observed in ground termite nests (Figure 7), whose external walls may be substituted for tree buttresses (as arena for courtship) and its openings are used for hiding places during daytime.

This whip spider species was recorded in low abundance in the state of Piauí, maybe due to the high temperatures associated with low humidity, which is frequent in northeastern Brazil; in contrast to collections from other more humid Brazilian regions (*e.g.* Amazon Forest). For example, Dias and Machado (2006) located 46 individuals during July 2004 in the Amazon Forest, while our six-year sampling in Piauí resulted in less than 60 whip spiders. The presence of *H. longicornis*, in Piauí, can also be explained by the warmer and more humid environments of termite nests that provide suitable conditions for this species. Whip spiders have been known since 1981 in Piauí, when Lucas *et al.* (1981) first reported an undetermined Phrynidae from Avelino Lopes municipality, thus these are the first report of a determined species for this state.

FIGURE 4. Habitat occupied by *Heterophrynus longicornis* in the state of Piauí, northeastern Brazil: semi-decidual dry forest from Sete Cidades National Park, municipalities of Brasileira and Piracuruca.

FIGURE 5. Habitat occupied by *Heterophrynus longicornis* in the state of Piauí, northeastern Brazil: gallery forest from Sete Cidades National Park, municipalities of Brasileira and Piracuruca.

FIGURE 6. Habitat occupied by *Heterophrynus longicornis* in the state of Piauí, northeastern Brazil: palm tree woodlands from Nazareth Farm, municipality of José de Freitas.

Figure 7. Habitat occupied by *Heterophrynus longicornis* in the state of Piauí, northeastern Brazil: example of ground termite nest used by whip spiders, at Sete Cidades National Park, municipalities of Brasileira and Piracuruca.

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